REMARKS

The Office Action dated April 1, 2009 has been received and carefully noted. The following remarks are submitted as a full and complete response thereto.

Claims 25-68 are currently pending in the application and are respectfully submitted for consideration.

The Office Action rejected claims 25, 28-40, 42-44, 46-47, 49-52, and 55-67 under 35 U.S.C. §103(a) as being unpatentable over Cidon et al. (Control Mechanisms for High Speed Networks), hereinafter Cidon, in view of Yum et al. (Multicast Source routing in Packet-Switched Networks), hereinafter Yum, and further in view of Reinshmidt et al. (U.S. 2002/0150041), hereinafter Reinshmidt. The Office Action took the position that Cidon discloses all the elements of the claims with the exception of "generation of updating information," "wherein the respective updating information sent to the immediate offspring nodes differs for each of the immediate offspring modes based on the spanning tree structure," and other similar limitations. The Office Action then cited Yum and Reinshmidt as allegedly curing the deficiencies of Cidon. The rejection is respectfully traversed for at least the following reasons.

Claim 25, upon which claims 26-41 are dependent, recites a method, which includes detecting a network parameter change in a network node of the network, and determining, based on topology information of a radio access network, a spanning tree of routing paths corresponding to shortest paths from the network node to other nodes. The

method further includes distributing network parameter information indicating the network parameter change from the network node to the other nodes in accordance with the spanning tree. The network node is configured to generate, for each of its immediate offspring nodes, a respective updating information and to send the respective updating information to all of the immediate offspring nodes. The respective updating information sent to the immediate offspring nodes differs for each of the immediate offspring nodes based on the spanning tree structure.

Claim 42, upon which claims 43-45 and 53-68 are dependent, recites an apparatus, which includes a detector configured to detect a change in a network parameter related to the apparatus, and a distributor configured to distribute a network parameter information to network nodes of a transmission network. The distributor distributes the network parameter information indicating the network parameter change towards the network nodes in response to the detection and in accordance with a spanning tree of routing paths corresponding to shortest paths from the apparatus to the network nodes. The apparatus further includes a generator configured to generate for each of a plurality of immediate offspring nodes a respective updating information, and a transmitter to send the respective updating information to all the immediate offspring nodes. The respective updating information sent to the immediate offspring nodes differs for each of the immediate offspring nodes based on the spanning tree structure.

Claim 46, upon which claims 47-48 are dependent, recites an apparatus, which includes a distributor configured to distribute a network parameter information to network nodes of a radio access network, and a receiver configured to receive a network parameter information from an upper node, to update a stored parameter information according to the received network parameter information, and wherein the distributor distributes the network parameter information to its immediate offspring network nodes based on a branch information included in the network parameter information, the branch information being derived from a spanning tree routing topology. The apparatus further includes an updater configured to update the branch information in the network parameter information before distributing the network parameter information to the network nodes. The updated information is sent to the network nodes and the updated information differs for each of the network nodes based on the spanning tree topology.

Claim 49 recites a system, which includes detecting means for detecting a network parameter change in a network node of a network, and determining means for determining, based on topology information of a radio access network, a spanning tree of routing paths corresponding to shortest paths from the network node to other nodes. The system further includes distributing means for distributing network parameter information indicating the network parameter change from the network node to the other nodes in accordance with the spanning tree. The network node is configured to generate, for each of its immediate offspring nodes, a respective updating information and to send

the respective updating information to all the immediate offspring nodes. The respective updating information sent to the immediate offspring nodes differs for each of the immediate offspring nodes based on the spanning tree structure.

Claim 50 recites a computer program embodied on a computer readable medium, the computer program configured to control a processor to perform, detecting a network parameter change in a network node of the network, and determining, based on topology information of a radio access network, a spanning tree of routing paths corresponding to shortest paths from the network node to other nodes. The computer program is further configured to control the processor to perform, distributing network parameter information indicating the network parameter change from the network node to the other nodes in accordance with the spanning tree. The network node is configured to generate, for each of its immediate offspring nodes, a respective updating information and to send the respective updating information to all the immediate offspring nodes. The respective updating information sent to the immediate offspring nodes differs for each of the immediate offspring nodes based on the spanning tree structure.

Claim 51 recites an apparatus, which includes detecting means for detecting a change in a network parameter related to the apparatus, and distributing means for distributing a network parameter information to network nodes of a transmission network. The distributing means distributes the network parameter information indicating the network parameter change towards the network nodes in response to the

detection and in accordance with a spanning tree of routing paths corresponding to shortest paths from the apparatus to the network nodes. The apparatus further includes generating means for generating for each of a plurality of immediate offspring nodes a respective updating information, and transmitting means for transmitting the respective updating information to all of the immediate offspring nodes. The respective updating information sent to the immediate offspring nodes differs for each of the immediate offspring nodes based on the spanning tree structure.

Claim 52 recites an apparatus, which includes distributing means for distributing a network parameter information to network nodes of a radio access network, and receiving means for receiving a network parameter information from an upper node, to update a stored parameter information according to the received network parameter information, and wherein the distributing means distributes the network parameter information to its immediate offspring network nodes based on a branch information included in the network parameter information, the branch information being derived from a spanning tree routing topology. The apparatus further includes updating means for updating the branch information in the network parameter information before distributing the network parameter information to the immediate offspring nodes. The updated network parameter information sent to the immediate offspring nodes differs for each of the immediate offspring nodes based on the spanning tree structure.

As will be discussed below, the combination of Cidon, Yum, and Reinshmidt fails to disclose or suggest all of the elements of the claims, and therefore fails to provide the features discussed above.

Cidon describes a high speed packet switching system for integrated voice, video and data communications, known as PARIS. The packet handling functions of PARIS are implemented mainly in dedicated high speed hardware, with only control functions requiring software involvement. The packet handling functions are based on variable sized packets combined with Automatic Network Routing (ANR), a form of source routing where each packet contains an ANR header composed of a concatenation of several link identifiers. The i^{th} identifier in the ANR header defines the outgoing link label of the i^{th} hop along the packet path. As the packet progress through the network, the used identifiers are stripped off, so that the first bits in the ANR field always contain the routing information for the current node. (See Cidon at page 301.1.1., Introduction).

Yum describes an multicast source-routing method, which is a generalization of the linear source-routing method ANR, where the headers of a packet contain an ANR field where the i^{th} word defines the outgoing link label of the i^{th} hop along the packet's path. The multicast method includes the computation of a multicast spanning tree from the topology database at the source node, the coding of the multicast address tree to form the packet header, and duplicating and dispatching packets at intermediate nodes without table look-up and external processing. (See Yum at 11B.2.1-11B.2.2, Introduction).

Reinshmidt describes a method and system for providing an improved quality of service for data transportation over the Internet. Selected nodes are determined as access points to the data network. One or more intermediate nodes are selected, for generating a plurality of alternative paths between the source node and the destination node, where each of the alternative paths consists of segments and includes one or more intermediate nodes for routing the selected data packets. One or more optimal paths, being selected from the alternative paths, are defined for delivering the selected data packets from the source node to the destination node according to the tested transportation parameters. (See Reinshmidt at Abstract).

Applicants respectfully submit that Cidon, Yum, and Reinshmidt, whether considered individually or in combination, fail to disclose, teach, or suggest, all of the elements of the present claims. For example, the combination of Cidon, Yum, and Reinshmidt fails to disclose, teach, or suggest, at least, "*wherein said network node is configured to generate, for each of its immediate offspring nodes, a respective updating information and to send said respective updating information to all of the immediate offspring nodes ... wherein the respective updating information sent to the immediate offspring nodes differs for each of the immediate offspring nodes based on the spanning tree structure*," as recited in independent claim 25, and similarly recited in independent claims 42, 49, 50, and 51; and "*an updater configured to update said branch information in said network parameter information before distributing said network parameter*

information to said network nodes ... wherein the updated information is sent to the network nodes and said updated information differs for each of the network nodes based on the spanning tree topology," as recited in independent claim 46, and similarly recited in independent claim 52.

As described above, Cidon describes packet handling functions in a PARIS system, based on variable sized packets combined with ANR, where each packet contains an ANR header composed of a concatenation of several link identifiers. Specifically, in PARIS, a broadcast is performed using a spanning tree structure defined in the network. The nodes execute a distributed tree maintenance protocol in order to initially construct the spanning tree and maintain it throughout the life of the network. When a node wishes to broadcast a topology update message, the node creates a packet with a topology tree broadcast message, and transmits it to all its neighbors on the topology spanning tree. When the broadcast packet arrives over a tree link, it is forwarded over the other tree links. Thus, every node receives every message once, over one of its tree links, and forwards it to the other tree links. (See Cidon at page 301.1.5, col. 1, lines 36-49).

Thus, as the Office Action correctly concludes, Cidon fails to disclose, or suggest, generating update information and also fails to disclose, or suggest, the updating information that is sent to immediate offspring nodes differing for each of the immediate offspring nodes, because Cidon explicitly describes transmitting an identical message to

all its neighbor nodes on the topology spanning tree, where each neighbor node merely forwards the received message to the other tree links.

Furthermore, Yum and Reinshmidt, whether considered individually or in combination, do not cure the deficiencies of Cidon. As described above, Yum describes the ANR linear source-routing method, where the headers of a packet contain an ANR field where the where the i^{th} word defines the outgoing link label of the i^{th} hop along the packet's path. All routing information is assembled at the source node and put into the packet, to ensure that no table look-up and external processing is needed beyond the source node as the packet proceeds to each intermediate node towards its destination. (See Yum at 11B.2.1-11B.2.2, Introduction).

The Office Action takes the position that the assembling of all the routing information at the source node discloses the "*updating information*" recited in independent claim 25, and similarly recited in the other independent claims. Applicants respectfully submit that the Office Action's position is incorrect, because the routing information described in Yum is distinct from the "*updating information*" recited in independent claim 25, and similarly recited in the other independent claims. First, independent claim 25 recites "*updating information,*" as opposed to routing information. Furthermore, independent claim 25 recites "*detecting a network parameter change in a network node,*" and "*distributing network parameter information indicating said network parameter change from said network node to said other nodes.*" Independent claims 42,

46, and 49-52 recite similar limitations. Thus, the "*updating information*" of the independent claims relates to the network parameter change in a network node. More specifically, in an embodiment of the invention, when any change of a parameter happens in a node, parameter change information is initiated by the node and distributed to the other network nodes. (See Specification at page 6, lines 32-34). In contrast, in Yum, the routing information merely relates the outgoing link label of the respective hop along the packet's path. Thus, the routing information of Yum fails to disclose the "*updating information*," as recited in independent claim 25, and similarly recited in independent claims 42, 46, and 49-52. Therefore, Yum fails to disclose, or suggest, the aforementioned limitations of the independent claims.

Moreover, while Cidon describes several control mechanism for high speed networks where the topology broadcast function using a spanning tree structure is merely mentioned as one of a plurality of possible mechanisms, Yum describes a multicast source routing mechanism where a spanning tree structure is used for source routing for multicast packets to provide a point-to-multipoint transmission function. Thus, there is no motivation for one of ordinary skill in the art, at the time the present invention was made, to have incorporated the teachings of Yum into the invention of Cidon in order to a disclose a generation of updating information to be forwarded. Accordingly, the Examiner has engaged in an impermissible hindsight analysis in order to combine the

cited references of Cidon and Yum. Accordingly, this rejection is improper and should be withdrawn.

Regarding Reinshmidt, Reinshmidt describes a packet routing scheme where a packet starts at an originator node and is forwarded to nodes along an predetermined path until the packet reaches its destination. An offset number is implemented in the packet header, so that the next consecutive node along the path will be able to recognize whether the packet is to be forwarded to the next intermediate node, or whether the packet has arrived at its destination. To make this decision, the offset number is compared to the current hop number, which is updated every time the packet enters a node. If the offset number and the current hop number differ, the node puts the next consecutive (i.e. intermediate) node's IP address (to which the packet should be forwarded) as the next intermediate destination, and updates the current hop number. The modified packet is then transmitted to the next intermediate destination. (See Reinshmidt at paragraph 0079).

The Office Action took the position that the next consecutive nodes described in Reinshmidt discloses the "*immediate offspring nodes*" recited in independent claim 25, and similarly recited in the other independent claims. Applicants respectfully submit that the Office Action's position is incorrect, because of the following reasons. First, Reinshmidt is not related to any spanning tree structure, where the next nodes are serially disposed and only the first next node can be considered as an immediate node with

respect to the initiating node, and all other nodes are only immediate with respect to its preceding node along the chain structure. In contrast, according to an embodiment of the invention, the offspring nodes are disposed in parallel within a spanning tree structure in such a manner that each offspring node can be an immediate node with respect to the initiating node. (See Specification at page 10, lines 3-10; Figure 6). Moreover, in Reinshmidt, the packet is sequentially forwarded from a node to the next consecutive node according to a comparison-based decision made at that next consecutive node, until it arrives at the destination node, where the hop number of the packet is updated <u>at each intermediate node</u>. Thus, each intermediate node receive a packet with a different hop count. In contrast, according to an embodiment of the invention, the updating information is generated at the initiating node, and the updating information is received at each intermediate node. Thus, the next consecutive nodes of Reinshmidt fails to disclose the "*immediate offspring nodes*," as recited in independent claim 25, and similarly recited in independent claims 42, 46, and 49-52. Therefore, Reinshmidt fails to disclose, or suggest, the aforementioned limitations of the independent claims.

Therefore, for at least the reasons discussed above, the combination of Cidon, Yum, and Reinshmidt fails to disclose, teach, or suggest, all of the elements of independent claims 25, 42, 46, and 49-52. For the reasons stated above, Applicants respectfully request that this rejection be withdrawn.

Claims 28-40 depend upon independent claim 25. Claims 43-44 and 55-67 depend upon independent claim 42. Claim 47 depends upon independent claim 46. Thus, Applicants respectfully submit that claims 28-40, 43-44, 47, and 55-67 should be allowed for at least their dependence upon independent claims 25, 42, and 46, respectively, and for the specific elements recited therein.

The Office Action rejected claims 26, 27, 41, 45, 48, 53, 54 and 68 under 35 U.S.C. §103(a) as being unpatentable over Cidon in view of Yum, Reinshmidt and further in view of Neumiller et al. (WO 00/70782), hereinafter Neumiller. The Office Action took the position that the combination of Cidon, Yum, and Reinshmidt discloses all the elements of the claims with the exception of certain limitations. The Office Action then cited Neumiller as allegedly curing the deficiencies of Cidon, Yum, and Reinshmidt. The rejection is respectfully traversed for at least the following reasons.

Cidon, Yum, and Reinshmidt are described above. Neumiller describes a method and selector for performing selection in a communication system. Frames received by base stations are assigned a frame-quality indicator (FQI) by the base station. FQI information for all received frames is sent to a call anchoring base station, where a determination of a base station with the best FQI for each frame takes place. The anchoring base station then sends a FORWARD_FRAME message to the base station with the best FQI. Once the FORWARD_FRAME message is received by the base

station, the base station immediately forwards the frame to the switch, and the switch routes the selected frame accordingly.

Claims 26, 27, and 41 depend upon independent claim 25, claims 45, 53, 54 and 68 depend upon independent claim 42, and claim 48 depends upon independent claim 46. As discussed above, the combination of Cidon, Yum, and Reinshmidt does not disclose, teach, or suggest all of the elements of independent claims 25, 42, and 46.

Furthermore, Neumiller does not cure the deficiencies in Cidon, Yum, and Reinshmidt, as Neumiller also does not disclose, teach, or suggest, at least, "*wherein said network node is configured to generate, for each of its immediate offspring nodes, a respective updating information and to send said respective updating information to all of the immediate offspring nodes ... wherein the respective updating information sent to the immediate offspring nodes differs for each of the immediate offspring nodes based on the spanning tree structure*," as recited in independent claim 25, and similarly recited in independent claim 42; and "*an updater configured to update said branch information in said network parameter information before distributing said network parameter information to said network nodes ... wherein the updated information is sent to the network nodes and said updated information differs for each of the network nodes based on the spanning tree topology*," as recited in independent claim 46.

Thus, the combination of Cidon, Yum, Reinshmidt, and Neumiller does not disclose, teach, or suggest all of the elements of claims 26, 27, 41, 45, 48, 53, 54 and 68.

Additionally, claims 26, 27, 41, 45, 48, 53, 54 and 68 should be allowed for at least their dependence upon independent claims 25, 42, and 46, respectively, and for the specific elements recited therein.

For at least the reasons discussed above, Applicants respectfully submit that the cited prior art references fail to disclose or suggest all of the elements of the claimed invention. These distinctions are more than sufficient to render the claimed invention unanticipated and unobvious. It is therefore respectfully requested that all of claims 25-68 be allowed, and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicants' undersigned representative at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,

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